

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1–20 (Canceled).

Claim 21 (Currently Amended): A medical lead comprising:

a lead body;

a porous electrode mounted on ~~[[a]] the~~ lead body to deliver electrical stimulation to a stimulation site within a patient;

a genetic material that causes expression of at least one of a connexin or a gap-junction by the tissue at the stimulation site, wherein the expression of the at least one of the connexin or the gap-junction by the tissue at the stimulation site increases the conductivity of the tissue; and

a chamber body that defines a chamber, the chamber containing a polymeric matrix that absorbs ~~[[a]] the~~ genetic material and ~~degrades to elute~~ elutes the genetic material to tissue at the stimulation site via the porous electrode, ~~wherein the genetic material is adapted to cause expression of at least one of a connexin or a gap-junction by the tissue at the stimulation site to increase the conductivity of the tissue at the stimulation site.~~

Claim 22 (Original): The medical lead of claim 21, wherein the matrix comprises extracellular collagen.

Claim 23 (Currently Amended): The medical lead of claim 21, wherein the matrix is cross-linked, and ~~degrades to elute~~ elutes the absorbed genetic material at a degradation rate that is a function of the cross-linking.

Claim 24 (Original): The medical lead of claim 21, wherein the chamber body is separable from the lead for loading with the matrix and the genetic material.

Claim 25 (Canceled).

Claim 26 (Previously Presented): The medical lead of claim 21, wherein the genetic material comprises at least one of a viral vector, a liposomal vector or plasmid deoxyribonucleic acid (DNA).

Claims 27 and 28 (Canceled).

Claim 29 (Currently Amended): The medical lead of claim ~~[[28]]~~ 21, wherein the genetic material is adapted to cause expression of connexin-43 by the tissue at the stimulation site.

Claim 30 (Previously Presented): The medical lead of claim 21, wherein the genetic material is adapted to cause expression of at least one of a metalloproteinase, an anti-inflammatory agent or an immunosuppressant agent.

Claim 31 (Previously Presented): The medical lead of claim 30, wherein the genetic material is adapted to cause expression of IκB.

Claim 32 (Original): The medical lead of claim 21, wherein the electrode is implantable within the patient.

Claim 33 (Original): The medical lead of claim 32, wherein the tissue at the stimulation site comprises cardiac tissue.

Claim 34 (Canceled).

Claim 35 (Previously Presented): A method comprising:

introducing genetic material to a polymeric matrix; and

placing the matrix into a chamber formed by a chamber body of a medical lead for elution of the genetic material to tissue of a patient at a stimulation site, wherein the genetic material is adapted to cause expression of at least one of a connexin or a gap-junction by the tissue at the stimulation site to increase the conductivity of the tissue at the stimulation site, the medical lead including a porous electrode, wherein the matrix elutes the genetic material to the stimulation site via the porous electrode.

Claim 36 (Previously Presented): The method of claim 35, further comprising:
blending extracellular collagen and gelatin; and
freeze-drying the blended extracellular collagen and gelatin to form the matrix.

Claim 37 (Original): The method of claim 35, further comprising:
identifying the genetic material and an elution rate; and
cross-linking the matrix based on the genetic material and the elution rate.

Claim 38 (Original): The method of claim 35, further comprising lyophilizing the matrix containing the genetic material.

Claim 39 (Original): The method of claim 35, further comprising:
freezing the chamber body containing the matrix and the genetic material; and
providing the frozen chamber body to a clinician,
wherein the clinician thaws the chamber body and assembles the lead to include the chamber body for implantation of the lead into the patient.

Claim 40 (Previously Presented): The method of claim 35, further comprising:
soaking the matrix in the genetic material; and
placing the matrix into the chamber.

Claim 41 (Previously Presented): The method of claim 40,
wherein soaking the matrix in the genetic material and placing the matrix into the chamber comprises soaking the matrix in the genetic material and placing the matrix into the chamber by a clinician, and
wherein the lead comprises a lead body, and the clinician assembles the lead body, chamber body and electrode prior to implantation of the lead within the patient.

Claim 42 (Previously Presented): The method of claim 35, wherein the chamber body is located at a distal end of the lead, the method further comprising immersing the distal end of the lead into the genetic material by a clinician to introduce the genetic material to the matrix.

Claim 43–45 (Canceled).

Claim 46 (Previously Presented): The medical lead of claim 21, wherein the genetic material is adapted to cause expression of at least one of a connexin or a gap-junction by the tissue at the stimulation site to increase the conductivity of the tissue at the stimulation site and create a preferential conduction pathway between the stimulation site and at least one of a bundle of His or a Purkinje fiber of a heart of the patient.

Claim 47 (New): A medical lead comprising:

- a lead body;
- a porous electrode mounted on the lead body, wherein the porous electrode delivers electrical stimulation to a stimulation site within a patient;
- a genetic material that causes expression of at least one of a connexin or a gap-junction by the tissue at the stimulation site, wherein the expression of the at least one of the connexin or the gap-junction by the tissue at the stimulation site increases the conductivity of the tissue; and
- a chamber body that defines a chamber containing a polymeric matrix that absorbs the genetic material and elutes the genetic material to tissue at the stimulation site via the porous electrode, wherein the polymeric matrix comprises extracellular collagen.

Claim 48 (New): The medical lead of claim 47, wherein the matrix is cross-linked, and degrades to elute the absorbed genetic material at a degradation rate that is a function of the cross-linking.

Claim 49 (New): The medical lead of claim 47, wherein the chamber body is separable from the lead for loading with the matrix and the genetic material.

Claim 50 (New): The medical lead of claim 47, wherein the genetic material comprises at least one of a viral vector, a liposomal vector or plasmid deoxyribonucleic acid (DNA).

Claim 51 (New): The medical lead of claim 47, wherein the genetic material is adapted to cause expression of connexin-43 by the tissue at the stimulation site.

Claim 52 (New): The medical lead of claim 47, wherein the genetic material is adapted to cause expression of at least one of a metalloproteinase, an anti-inflammatory agent or an immunosuppressant agent.

Claim 53 (New): The medical lead of claim 47, wherein the genetic material is adapted to cause expression of I κ B.

Claim 54 (New): The medical lead of claim 47, wherein the genetic material is adapted to cause expression of at least one of a connexin or a gap-junction by the tissue at the stimulation site to increase the conductivity of the tissue at the stimulation site and create a preferential conduction pathway between the stimulation site and at least one of a bundle of His or a Purkinje fiber of a heart of the patient.